

13/pds

PET BOTTLE

[Technical Field]

The present invention relates to a PET bottle for containing  
5 a soft drink such as juice, tea and mineral water.

[Background Art]

Conventionally, a PET bottle for containing a soft drink  
consists of a bottle main body made of a thermoplastic resin and  
a cap detachably attached to a mouth portion of the bottle main  
body. As disclosed in JP-A-7-205258, the bottle main body is provided  
with decompression panels for avoiding deformation, fracture and  
the like of the bottle main body following compression and  
decompression inside the bottle main body.

The bottle main body is generally molded as follows. A  
polyethylene terephthalate resin material is injected to form a  
preform of a test tube shape. The preform includes a mouth portion  
having a support ring and a male screw formed on its open-end side.

The mouth portion is subject to whitening crystallization by  
appropriate means to make it less likely that deformation due to  
20 heat or the like occurs. The lower portion of the preform other  
than the mouth portion is heated by heating means such as an infrared  
ray lamp. Next, the heated preform is placed in blow molds of  
predetermined shapes and inflated in the circumference direction  
by blowing pressurized air into the preform while being extended

in the longitudinal direction by a stretch rod to form a bottle main body of a shape along the internal surface shapes of the blow molds.

The bottle main body molded by a so-called biaxial stretching blow molding as described above is filled with a heat-sterilized drink from the mouth portion at a drink filling chamber and a sterilized cap is attached to the mouth portion to complete a PET bottle. Although the inside of the PET bottle is decompressed when a temperature of the heat-sterilized drink falls, since the decompression panels are deformed, deformation and fracture of the bottle main body can be avoided. Further, the decompression panels are made of recessed portions.

Since the bottle main body of the conventional PET bottle is formed in an extremely simple cylindrical or rectangular parallelepiped shape having the decompression panels provided on the entire surface, there is a problem in that it lacks fun and is immediately thrown away when the soft drink inside is consumed. In addition, since any conventional bottle has almost the same external shape regardless of goods, there is a problem in that consumer eagerness to purchase cannot be aroused by the external shape.

#### [Disclosure of the Invention]

The present invention has been devised in view of the above-mentioned problems, and it is an object of the present invention

to provide a PET bottle of an unknown and new structure in which a bottle main body is divided into a base portion and an ornamental portion and decompression panels are provided on the base portion side, the ornamental portion can be formed in various characteristic shapes, and which can arouse consumer eagerness to purchase by the ornamental portion.

A PET bottle in accordance with the first claim of the present invention has the following means in order to attain the above-mentioned object.

(a) a bottle main body and a cap that is detachably attached to a mouth portion of the bottle main body.

(b) wherein the bottle main body is made of a thermoplastic resin and consists of a base portion and an ornamental portion.

(c) wherein the base portion is provided with decompression panels for avoiding deformation, fracture and the like of the bottle main body following compression/decompression inside the bottle main body.

A PET bottle in accordance with the second claim of the present invention has the ornamental portion formed in an animal or a human shape in addition to the above-mentioned means.

A PET bottle in accordance with the third claim of the present invention has the cap formed in a hat shape in addition to the above-mentioned means.

[Brief Description of the Drawings]

Fig. 1 is an overall perspective view showing an embodiment of a PET bottle in accordance with the present invention;

Fig. 2 is a side view of Fig. 1;

Fig. 3 is a front view of Fig. 1;

Fig. 4 is a plan view of Fig. 1;

Fig. 5 is an X-X sectional view of Fig. 3;

Fig. 6 is a front view showing a manufacturing step;

Fig. 7 is a sectional view showing a manufacturing step;

Fig. 8 is a sectional view showing a manufacturing step;

Fig. 9 is an overall perspective view showing another embodiment of the PET bottle in accordance with the present invention;

Fig. 10 is a perspective view showing a form of a cap;

Fig. 11 is a sectional side view of Fig. 10;

Fig. 12 is an overall perspective view showing a state in which the cap of Fig. 10 is used; and

Fig. 13 is a side sectional view of Fig. 12.

[Best Mode for carrying out the Invention]

Embodiments of the present invention will be described based on Figs. 1 to 13. Fig. 1 is an overall perspective view showing an embodiment of a PET bottle in accordance with the present invention. Fig. 2 is a side view of Fig. 1. Fig. 3 is a front view of Fig. 1. Fig. 4 is a plan view of Fig. 1. Fig. 5 is an X-X sectional

view of Fig. 3. Fig. 6 is a front view showing a manufacturing step. Figs. 7 and 8 are sectional views showing manufacturing steps. Fig. 9 is an overall perspective view showing another embodiment of the PET bottle in accordance with the present invention. Fig. 10 is a perspective view showing one form of a cap. Fig. 11 is a sectional side view of Fig. 10. Fig. 12 is an overall perspective view showing a state in which the cap of Fig. 10 is used. Fig. 13 is a side sectional view of Fig. 12.

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A PET bottle 1 in accordance with the first claim of the present invention consists of a bottle main body 2 and a cap 21 that is detachably attached to a mouth portion 16 of the bottle main body 2. The bottle main body 2 is made of a thermoplastic resin, more specifically, a polyethylene terephthalate resin, and consists of a base portion 3 of a bottomed cylinder shape and an ornamental portion 10 above the base portion 3. The base portion 3 is provided with a plurality of compression panels 5 for avoiding deformation, fracture and the like of the bottle main body 2 following compression/decompression inside the bottle main body 2. The decompression panels 5 are made of elliptic recessed portions 6. Further, the shape of the recessed portions is not specifically limited and they can be rectangular recessed portions 7 as shown in Fig. 9.

The ornamental portion 10 is formed in an animal shape, on which a head portion 11, a torso portion 12, arm portions 13 and

leg portions 15 are formed. The mouth portion 16 is formed at the top of the head portion 11. A support ring 17 and a male screw 19 above the support ring 17 are formed at the mouth portion 16. The cap 21 is detachably screwed onto the male screw 19 of the mouth portion 16.

The bottle main body 2 is formed as follows. A polyethylene terephthalate resin material is injected by an injection apparatus to form a preform 22 of a test tube shape. The preform 22 includes the mouth portion 16 having the support ring 17 and the male screw 19 formed on its open-end side. The mouth portion 16 is subject to whitening crystallization by appropriate means to make it less likely that deformation due to heat or the like occurs.

The lower portion of the preform 22 other than the mouth portion 16 is heated by heating means such as an infrared ray lamp. Next, the heated preform 22 is placed in blow molds 29 and 30 of predetermined shapes and inflated in the circumference direction by blowing pressurized air in the preform 22 while being extended in the longitudinal direction by a stretch rod 31 to form the bottle main body 2 of a shape along the internal surface shapes of the blow molds. The blow mold 30 consists of a front mold 32 and a rear mold 33 to be joined with the front mold 32 and has recessed portions, which form the outline of the base portion 3 and the outline of ornamental portion 10, formed on its internal surface.

The bottle main body 2 molded by a so-called biaxial stretching

blow molding as described above is filled with a heat-sterilized drink from the mouth portion 16 in a drink filling chamber and a sterilized cap 21 is screwed onto the male screw 19 of the mouth portion 16 to complete the PET bottle 1. Although the inside of the PET bottle 1 is decompressed when a temperature of the heat-sterilized drink falls, since the decompression panels 5 are deformed, deformation and failure of the bottle main body 2 can be avoided.

Since the PET bottle 1 is provided with the decompression panels 5 intensively around the base portion 2 as described above, it is not necessary to provide the decompression panels 5 on the ornamental portion 10, whereby the ornamental portion 10 can be molded at will. With the ornamental portion 10, a characteristic is given to a form unlike the conventional PET bottle of a simple shape, which makes it easy to distinguish goods from other goods by an external shape, and consumer eagerness to purchase is aroused by the ornamental portion 10.

In addition, since the PET bottle 1 has a shape in which the ornamental portion 10 is mounted on the base portion 3, there is an effect in that it can be used as an ornament with the base portion 3 as a pedestal and can also be used as a flower vase or a paper weight with water in the bottle main body 2 even after a soft drink in the bottle main body 2 is consumed. In addition, if a shape of the base portion 3 is adapted to a standard of an ordinary PET bottle

since the base portion 3 can be manufactured in a conventional manufacturing line, it is not necessary to provide a new manufacturing line. In addition, the base portion 3 can be easily grasped when filling it with a drink. Moreover, if the ornamental portion 10 is formed not to exceed the external circumference of the base portion 3, the PET bottles 1 can be housed uniformly at an equal interval in a conventional case for transporting PET bottles without leaning to one side. Furthermore, since the ornamental portions 10 do not contact each other, they are not damaged.

Further, although the ornamental portion 10 is formed in an animal shape, it is not limited to the shape and can be modified in various shapes such as a human shape, an automobile shape and a rocket shape. If the ornamental portion 10 is formed in an animal shape, a human shape or the like, it particularly stimulates eagerness to purchase of children and the PET bottle 1 can be used as a toy after a soft drink is consumed.

In addition, as shown in Figs. 10 and 11, a cap can be formed in a hat shape. The cap 24 is provided with a cylindrical cap main body 25, a brim portion 26 formed in the lower periphery of the main body 25, a female screw portion 27 to be screwed onto the male screw portion 19 of the mouth portion 16 and a recessed portion 28 for containing the support ring 17. When the female screw portion 27 of the cap 24 is screwed onto the male screw portion 19 of the mouth portion 16 of the bottle main body 2, the entire mouth portion

16 is housed in the cap 24 to form a shape as if a hat is put on the head portion 11 of the ornamental portion 10 formed in an animal shape, and thus the PET bottle can be used as an ornament.

As described above, since the PET bottle according to the first claim of the present invention is provided with decompression panels centering around a base portion, there is an effect in that it becomes unnecessary to provide decompression panels on an ornamental portion, whereby the ornamental portion can be molded at will. In addition, since an ornamental portion is molded, there is also an effect in that a characteristic is given to a form unlike the conventional PET bottle of a simple shape, which makes it easy to distinguish goods from other goods by an external shape, and consumer eagerness to purchase is aroused by the ornamental portion.

Moreover, even after a soft drink in a bottle main body is consumed, since the PET bottle according to the first aspect of the present invention has a shape in which an ornamental portion is mounted on a base portion, there is an effect in that it can be used as an ornament with the base portion as a pedestal and can also be used as a flower vase or a paper weight with water in the bottle main body. In addition, if a shape of a base portion is adapted to a standard of an ordinary PET bottle, since the base portion can be manufactured in a conventional manufacturing line, there is an effect in that it is not necessary to provide a new manufacturing line. In addition, there is also an effect in that the base portion

can be easily grasped when filling it with a drink. Moreover, if an ornamental portion is formed not to exceed an external circumference of a base portion, there is an effect in that the PET bottles can be housed uniformly at an equal interval in a conventional case for transporting PET bottles without leaning to one side. Furthermore, since ornamental portions do not contact each other, there is also an effect in that they are not damaged.

Since the PET bottle according to the second claim of the present invention is formed in an animal shape, there is an effect in that it particularly stimulates eagerness to purchase of children and can be used as a toy after a soft drink is consumed.

Since the PET bottle according to the third claim of the present invention has a cap formed in a hat shape, there is an effect in that it can take a form in which an ornamental portion such as an animal or a doll wears a hat and, as a whole, becomes an ornament.

#### [Industrial Applicability]

The present invention is suitable for a PET bottle for containing a soft drink such as juice, tea and mineral water.

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